Research Proves GroCo Makes Efficient Use of Water Supply

By Rob Harrison, College of Forest Resources, University of Washington

Does adding compost to soil effect how efficiently plants use water? The question has never been more apt.

And our research shows that while adding GroCo or other composted matter doesn't effect how much water plants need to attain a certain size or yield, it can have a profound effect on the amount of water you need to provide a sufficient supply.

> ***"A typical water retention ... for an Indianola sand is 12 percent, while the measured water-holding capacity of GroCo is 67 percent."***

Much water wasted.

Much of the water used in typical Seattle irrigation is wasted due to percolation deep into soil below the plants' roots. Improvements in water use efficiency generally are due to an increase in soil's water-holding capacity, which increases the soil's water availability to plants. To illustrate the effects of compost addition on typical water use, we compared a common Seattle backyard soil (Indianola loamy sand) to a 50:50 mixture of Indianola soil and GroCo.

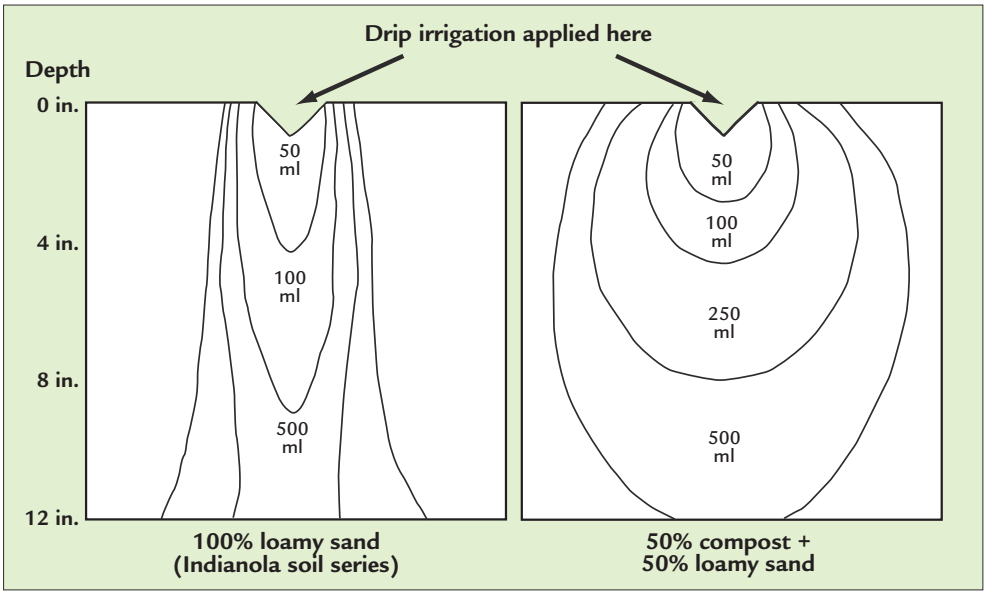
Water-holding capacity increased dramatically in the GroCo mixture. Sand particles have a low ability to retain water. If we saturate soil, water moves down through the soil, below plant roots. It is necessary for productive soil to have large soil pores for aeration and good soil "tilth." When soil is thoroughly wet and excess water has drained from the soil, it is said to be at "field capacity." Most of the water held in the soil in this state is available for plant growth.

Sand's ability to hold water at field capacity is low, while a clay soil will generally hold more water. But water normally does not penetrate into clay soils well. Organic matter is composed of large particles that are porous. Thus, water penetrates into the soil through the large pores and is held for plant availability in small pores. Obviously, this is the best situation.

GroCo holds five times more water than regular soil.

A typical water retention field capacity for an Indianola sand is 12 percent, while the measured water-holding capacity of GroCo is 67 percent. This means that more than five times as much plant-available water is held in compost compared to Indianola sand.

The illustration below shows the substantial difference in water holding capacity. Drip Irrigation was applied to a soil column in a 100 percent loamy sand and a 50 percent GroCo percent GroCo/50 percent loamy sand mixture. Wetting lines mark each addition of water at 50,100, 250 and 500 ml. Much of the water added to the 100 percent loamy sand moved deep into the soil out of reach of plant roots. Due to the higher water-holding capacity of the soil/ compost mixture, water penetrated into the soil to less depth and spread out laterally through the soil to a greater extent, providing more available water and wetting a greater amount of soil from a single point. Thus infrequent irrigation or small area irrigation methods such as drip irrigation particularly benefits from compost additions.



Reprinted with permission from Rob Harrison and GroCo News (Vol. 5, No.2, June 1992 Issue).
File: 0808_GrocoArticle.indd Lpre DNRP GIS, Visual Communications & Web Unit Archives